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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/056,880

10/26/2001

Gregory H. Milby

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03/17/2008

JAMES M. STOVER
TERADATA CORPORATION
2835 MIAMI VILLAGE DRIVE
MIAMISBURG, OH 45342

EXAMINER

WONG, LESLIE

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/056,880	Applicant(s) MILBY, GREGORY H.	
	Examiner LESLIE WONG	Art Unit 2164	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-12, 16, 17, 21, 22, 25-28 and 30-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3-9, 25, 26 and 31 is/are allowed.
- 6) ☒ Claim(s) 2, 10-12, 16, 17, 21, 22, 27, 28, 30 and 32 is/are rejected.
- 7) ☒ Claim(s) 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10/26/2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/09/2008 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 2, 10-12, 16-17, 21-22, 27, 28, and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by **Paulley; Glenn Norman** ("Paulley") (US 6516310 B2).

Regarding claim 11, **Paulley** teaches an article comprising at least one storage medium containing instructions that when executed cause a database system to:

receive a join query containing at least one function selected from the group consisting of a selection predicate applied on a complex attribute, a projection applied on a complex attribute, and a user-defined data type method, *the join query specifying a join of a first table and a second table to produce a join table* (col. 9, lines 11-20 and 40-62; col. 8, lines 55-56); and

determine a join path for the join query based at least in part on a cost associated with application of the function (col. 9, lines 55-56 and col. 11, lines 59-66), wherein determining the join path comprises selecting the join path in which the function is applied on the join table rather than the first table or second table to reduce cost (col. 9 lines 36-40, col. 11, lines 59-66 and Fig. 3).

Regarding claims 2 and 21, **Paulley** further teaches a database system comprising:

A storage system to store tables (Fig. 1, element 107); and

An optimizer to receive a join query that specifies a function selected from the group consisting of a selection predicate applied on a complex attribute, a projection applied on a complex attribute, and a user-defined data type method (col. 9, lines 11-20 and 40-62; col. 8, lines 55-56);

The optimizer to select a join plan based at least in part on a comparison of a first cost of applying the function on a first table and a second cost of applying the function on a second table, wherein the optimizer is to select the join plan that applies that function on the one of the first table and second table with a lower cardinality, wherein

the second table is a join result of the first table and another table (col. 9 lines 36-40, col. 11, lines 59-66 and Fig. 3; col. 12, lines 32-38);

Wherein the join query specifies the function being applied on the first table, and the optimizer to apply the function on the second table rather than the first table in response to determining the second cost is lower than the first cost (col. 9 lines 36-40, col. 11, lines 59-66 and Fig. 3).

Regarding claims 10 and 22, **Paulley** further teaches wherein determining the costs of applying the function on the first and second tables comprises determining the costs of applying the function on object relational tables (col. 8, lines 34-37).

Regarding claim 12, **Paulley** further teaches wherein the join query specifies the function being applied on the first table, and wherein the instruction when executed cause the database system to determine the join path in which the function is applied on the join table (col. 11, lines 1-11).

Regarding claim 16, **Paulley** further teaches wherein the instructions when executed cause the system to determine the join path by further specifying a join of the join table and a third table to produce a fourth table (col. 15, lines 51 to col. 16, line 37).

Regarding claim 17, **Paulley** further teaches wherein the join query further specifies application of a second function selected from the group consisting a selection

predicate applied on a complex attribute, a projection applied on a complex attribute, and a user define data type method, the second function being applied on a third table (col. 11, lines 12-26),

Wherein the instructions when executed cause the database system to determine the join path by further applying the second function one of the third table and the fourth table with a lower cardinality (col. 12, lines 32-38).

Regarding claim 27, **Paulley** teaches a method of performing a join in a database system comprising:

Receiving a join query containing at least one function selected from the group consisting of a selection predicate applied on a complex attribute, a projection applied on a complex attribute, and a user-defined data type method (col. 9, lines 11-20 and 40-62; col. 8, lines 55-56);

Determining a cost associated with applying the function on a first table and a cost associated with applying the function on a second table (col. 9 lines 36-40, col. 11, lines 59-66 and Fig. 3); and

Selecting a join path based on relative costs of applying the function on the first and second tables (col. 9 lines 36-40, col. 11, lines 59-66 and Fig. 3), and

Wherein the query specifies application of the function on the first table (col. 16, lines 15-16),

Wherein selecting the join path comprises selecting the join path in which the function is applied on the second table, the second table containing a join result of a join of the first table and another table (col. 16, lines 14-22 and col. 6, lines 9-12).

Regarding claims 28 and 30, **Paulley** further teaches the steps of:

Receive a second query specifying a join of the first table and another table, the second query specifying at least one of a selection predicate applied on a non-complex attribute and a projection applied on a non-complex attribute (col. 9, lines 11-20 and 40-62); and

Select another join path for the second query in which selection or projection is applied on one of the first table with the second table (col. 12, lines 32-35).

4. Claims 32 is rejected under 35 U.S.C. 102(e) as being anticipated by **Agarwal; Nipun et al.** ('Agarwal') US 6351742 B1.

Regarding claim 32, Agarwal teaches a method of performing a join in a database system, comprising:

receiving a join query specifying a joining of a first table and a second table and containing at least one of a selection predicate and a projection (col. 4, lines 45-47);

selecting a join path for the join query in response to determining whether the at least one of the selection predicate and projection is applied on a complex attribute (col. 7, lines 27-37; col. 6, lines 19-51),

wherein a first join path is selected in which the at least one of the selection predicate and projection is applied on a join table in response to determining that the at least one of the selection predicate and projection is applied on a complex attribute, the join table containing a join result of the first and second tables (col. 4, line 45- col. 5, line 21), and

wherein a second join path is selected in which the at least one of the selection predicate and projection is applied on the first table before the join in response to determining that the at least one of the selection predicate and the projection is applied on a non-complex attribute (col. 5, lines 20-44).

Allowable Subject Matter

5. Claims 3-9, 25, 26, and 31 are allowed.
6. Claim 29 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Prior art of record fails to teach a combination of elements including an optimizer module performing N-lookahead join planning in which costs for different combinations of joins of N+2 tables are determined, where N is greater than or equal to one as recited in dependent claim 29.

Conclusion

7. The prior art made of record and not relied upon in PTO-FORM 892 is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LESLIE WONG whose telephone number is (571) 272-4120. The examiner can normally be reached on Monday to Friday 9:30am - 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, CHARLES RONES can be reached on (571) 272-4085. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leslie Wong/
Primary Examiner, Art Unit 2164

LW
March 1, 2008

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